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Request for grant of a patent

The Patent Office
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1. Your Reference — **APUK011033**

2. Parent Application Number — **0120132.6**

3. Full name, address and postcode of the or of each applicant — **The Mead Corporation**
Courthouse Plaza NE
Dayton
Ohio 45463
USA

Patents ADP Number — 8884610 09

If the applicant is a corporate body, give the country/state of its incorporation — **Ohio, USA**

4. Title of the invention — **Article Carrier and Blank Therefor**

5. Name of your agent — **Hepworth Lawrence Bryer & Bizley**

"Address for Service" in the United Kingdom to which all correspondence should be sent — **Bloxam Court**
Corporation Street
Rugby
Warwickshire CV21 2DU
United Kingdom

Patents ADP number — **5608575007**

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and the or each application number

Country	Priority Application Number	Date of Filing

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application — Number of earlier application: — Date of filing:

8. Is a Statement of Inventorship and of right to grant of a patent required in support of this request — **Yes**

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9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	8 ✓
Claim(s)	4 ✓
Abstract	1 ✓
Drawing(s)	4 ✓

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translation of priority documents	
Statement of Inventorship and right to grant of a patent (Patents Form 7/77)	
Request for preliminary examination and search (Patents Form 9/77)	One ✓
Request for substantive examination (Patents Form 10/77)	
Any other documents	

11. I/We request the grant of a patent on the basis of this application

Signature Hepworth Lawrence Bryer & Bor

Date 17 August 2001

12. Name and daytime telephone number of person to contact in the United Kingdom. **Rupert Symons (01788) 577000**

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ARTICLE CARRIER AND BLANK THEREFOR

The invention relates to a carton produced for packaging a plurality of articles, for example, bottles. More particularly, the invention relates to a carton, which attaches to the tops of the articles thereby securing the articles in an array.

It is known to provide top gripping cartons which comprise so called "sunburst" apertures having a series of circumferentially arranged tabs which enable a bottle top to pass through the aperture which tabs engage on the underside of a bottle top or on the flange of a bottle neck to prevent the removal of the bottle from the aperture. A problem arises when such sunburst type apertures are used for bottles sealed using so called "crown corks". In this case, the location in which the tab engages on the underside of the bottle top is by its location high up the bottleneck, which creates a carton that is unstable. Further, the tabs are weakened by the unstable nature of the bottles within the carton so reducing its effectiveness.

In US 3 772 945 there is shown a carrier with a top panel comprising support tabs to support the upper part of an article contained in the carrier.

Another example is illustrated in EP 98918290.2 in which there is shown a carton of the top gripping type for accommodating a plurality of containers, for example, bottles, which carton is tubular in structure and comprises a first panel having a plurality of apertures, each has at least one foldable tab which operatively engages the underside of a radially protruding part of a container present in the aperture and a second panel spaced from the first panel and comprising a support tab struck from said second panel, said support tab comprising a main portion and a shoulder portion wherein an edge of said shoulder portion also operatively engages the underside of said radially protruding part to restrict movement of said second panel relative to upper portions of the container, said main portion being disposed between a pair of adjacent containers to minimize relative movement between those containers.

One problem with this approach is that a complicated folding arrangement is required to fold the support tabs.

A further problem associated with the prior art is that a top-gripping carton needs to be of sufficient strength to support the bottles. A rigid structure would address this problem but produces its own difficulties. In particular, the top panel and or base panel does not provide requisite rigidity and sufficient strength to support the bottles.

The present invention and its preferred embodiments seek to overcome the difficulties of the prior art by forming a box structure in which both the top and base are engaged on the bottle flanges and which is simple to construct. Additional support is provided to maintain the top and base panels in a spaced arrangement while additional strength is provided by multi-layering the panels. Therefore, the board can be reduced in thickness without reducing the strength needed to hold the bottles.

One aspect of the invention provides a tubular top-gripping carrier having a top wall including inner and outer overlapping panels, wherein a retaining structure depends from the inner panel to engage the underside of a radially protruding part of a necked article. The retaining structure has an opening for receiving at least a portion of the radially protruding part of the article, and a lower edge of the opening comprises an engaging edge for the underside of the radially protruding part.

Optionally, the retaining structure includes a connector panel hingedly connected to and extending downwardly from the free edge of the inner panel portion and an engaging flap hingedly connected to the lower edge of the connector panel, and the opening is formed at least in part in the connector panel.

Preferably, the engaging flap has an engaging tab projecting into the opening, and wherein the engaging tab comprises the engaging edge.

A second aspect of the invention provides a tubular top-gripping carrier for a plurality of articles, for example bottles, the carrier having a top wall including a pair of inner and outer lap panels, wherein a retaining structure depends from the inner panel. The retaining structure comprises a spacer strip disposed between adjacent rows of articles, the strip having one side edge for engagement with the articles in one row and the other side edge for engagement with the articles in the other row. The retaining structure may further comprise a connector panel extending downwardly from the free edge of the inner

lap panel portion, the connector panel being hingedly connected at its lower edge to a part of the one side edge of the spacer strip.

A third aspect of the invention provides a carton of the top gripping type for accommodating a plurality of containers, which carton is tubular in structure and comprises first and second spaced panels. The first panel has one or more apertures for receiving said containers, at least one foldable retaining tab hingedly connected to said first panel for operatively engaging an underside of a radially protruding part of a respective one of said containers. There further comprises a retaining structure hinged to said second panel, said retaining structure comprising an engaging flap with an engaging edge to engage said one of said containers and/ or said at least one retaining tab to restrict movement of said second panel relative to said first panel

Each said aperture may be defined by a pair of said retaining tabs struck from said first panel, said retaining tabs being disposed in substantially opposed positions.

Preferably, at least one of said retaining tabs having a shallow notch for receiving an edge of said shoulder portion to allow said edge to reach said radially protruding part of said one container.

According to an optional feature of the third aspect of the invention, the retaining structure is provided with an aperture for receiving part of the container, said engaging edge is formed from an edge of the aperture. Preferably, the engaging edge is spaced from said top panel.

According to another optional aspect of the invention, said engaging flap is disposed between said one container and an adjacent container to minimise relative movement between said one and adjacent containers.

A forth aspect of the invention provides a unitary blank for forming a carton of a top gripping type comprising a plurality of panels for forming a tubular structure including a first panel having a plurality of apertures each defined in part by at least one foldable retaining tab hingedly connected to said first panel to be folded out of a general plane of said first panel, and a second panel spaced from said first panel by an intermediate panel

and a retention structure hinged to the second panel. The retention structure has an opening for receiving at least a portion of the radially protruding part of the article in a set up condition, and a lower edge of the opening comprises an engaging edge for engaging the underside of the radially protruding part.

A fifth aspect of the invention provides a package comprising at least one container each including a substantially cylindrical upper portion and a part radially protruding from said upper portion; and a tubular top-gripping carrier of the top gripping type for accommodating a plurality of containers. The top-gripping carrier has a top wall including inner and outer overlapping panels, wherein a retaining structure depends from the inner panel to engage the underside of a radially protruding part of a necked article, the retaining structure has an opening for receiving at least a portion of the radially protruding part of the article, and a lower edge of the opening comprises an engaging edge for the underside of the radially protruding part

According to an optional feature of the fifth aspect of the invention, the retaining structure includes a connector panel hingedly connected to and extending downwardly from the free edge of the inner panel portion and an engaging flap hingedly connected to the lower edge of the connector panel, and the opening is formed at least in part in the connector panel.

Preferably, the engaging flap has an engaging tab projecting into the opening, and wherein the engaging tab comprises the engaging edge. More preferably the engaging flap is disposed between said one container and an adjacent container to minimise relative movement between said one and adjacent containers.

Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 is a plan view of an unfolded single paperboard blank from which a carton according to one embodiment of the invention is formed;

FIGURES 2 and 3 illustrate a carton in part formed condition from the carton blank shown in Figure 1; and

FIGURE 4 shows a carton formed from the blank shown in Figure 1.

Referring to the drawings and, in particular, Figure 1, there is shown a blank 10 for forming a carton made from paperboard or like foldable sheet material. In this embodiment, there comprises a unitary blank although it is envisaged that two or more blanks can be used, without departing from the scope of invention The blank 10 comprises a plurality of panels for forming a tubular carton of the top-gripping type. Thus, there comprises an inner top panel 12, a first side wall panel 14, base panel 16, second side wall panel 18 and an outer top wall panel 20 hingedly connected one to the next in series along fold lines 22, 24, 26 and 28 respectively.

There further comprises a retention structure 30 for retaining the one or more adjacent articles and to support the top and base panels in a spaced arrangement while additional strength is provided by multi-layering the panels engaging the articles. In this embodiment, retention structure 30 is hingedly connected to inner top panel 12 along fold line 32. It is envisaged that the retention structure could be formed from a separate blank, which is secured or hinged to the outer blank.

Turning to the construction of the retention structure 30, it has one or more apertures 40a, 40b for receiving part of an article, described in more detail below. Preferably, each aperture comprises an engaging edge 42a, 42b for engaging part of the article. In this embodiment, the retention structure is formed by a connector panel 36 which is hingedly connected to the inner top panel 12 and an engaging flap 34 hingedly connected to the opposing edge of the connector panel. Two apertures 40a and 40b are struck at least in part from the connecting panel, and optionally, extend into the engaging flap 34.

There further comprises one or more support tabs 50 struck from base panel 16. Each support tab 50 is used to engage part of an article as described in more detail.

Turning in detail to the configuration of one pair of supporting tabs 50a, there comprises tab 52a struck from and hingedly connected to base panel 16 along fold line 24 with its distal edge extending inwardly of base panel 16. Tab 52a comprises opposed side edges 62a, 64a which may curve outwardly to the distal edge 52, so that the distal edge 52 is

longer than the edge 60 connecting to base panel 16, thereby to improve engagement with the article.

A second tab 54a is hingedly connected to base panel 16 along fold line 56a, preferably positioned in a central region of base panel 16. Tab 56a is oppositely disposed to tab 52a with its distal edge 60a juxtaposed the distal edge of tab 52a. Likewise, the side edges curved outwardly towards its distal edge 64. Preferably, tabs 52a and 54a respectively define an aperture 70, shown in Figure 2, when the tabs 52, 54 are in a set up condition. There may further comprise an elongate recess 58a struck from the central portion of one or more tabs 52 and 54 to provide a small notch along each of their respective distal edges.

The other pairs of retaining tabs 50b, 50c, and 50d are substantially identical to the first pair of retaining tabs 50a and are not therefore described in any greater detail.

Turning to the construction of carton, as illustrated in Figures 2, 3 and 4, the blank requires a series of sequential folding and gluing operations which can be performed in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

A plurality of articles B are grouped together in an array. In this embodiment there are two rows of two bottles B each and the blank 10 is introduced to the group from above by relative vertical movement between the bottles B and the blank 10 during continuous forward feed movement well known in the art.

Each pair of support tabs 50 are folded along their respective fold lines 24, 56a and out of their general plane with respect to base panel 16 to create article receiving apertures 70, shown in Figure 2. The upper portions or neck portions of the bottles enter their respective apertures until the distal edges 60a of the support tabs come into contact with the radially protruding parts, e.g. the respective crown corks, or the bottles B associated within each of the apertures. Optionally, the edge of each article receiving apertures are in contact with the neck portion of each of the respective bottles B to provide additional support.

In this embodiment, the notch 58 formed in the distal edge of each of the tabs 50 engages the underside of the respective crown cork C. It is advantageous to incorporate such notches for more accurate alignment of the tabs and/or to provide a tab, which comes into contact with more of the underside of the crown cork than conventional tabs.

Side panel 14 is folded about fold line 24 and inner top panel 12 is folded about fold line 22 in direction X so that inner top panel 12 is disposed over the tops of the adjacent articles and in a substantially parallel and spaced relationship with base panel 16.

Thereafter, retention structure 30 is formed. As shown in Figure 3, the connecting panel 36 and engaging flap 34 are folded out of alignment with respect to the inner top panel 12 to reveal the apertures 40a and 40b, whereby protruding parts of the articles enter the apertures and are engaged by the engaging edges 42. The engaging flap 34 is pushed under the protruding part of the adjacent articles as shown in Figure 3 so that the free end edge engages the adjacent article.

In one class of embodiments the engaging edges 42 and end edge 41 abut the inner retaining tabs 54a and 54b to hold them in position. Furthermore, the engaging flap 34 functions as a brace to introduce rigidity to the carton and to reduce movement between adjacent articles. In some embodiments, the engaging flap 34 is sized to form an interference fit between adjacent articles A.

Side panel 18 is folded about fold line 26 and outer top panel 20 is folded about fold line 28 in direction Y such that outer top panel 20 is placed in a face to face relationship with inner top panel 12. Inner and outer top panels 12, 20 are secured together by glue or other securing means known in the art.

The carton is in a set up condition as shown in Figure 4 which shows a tubular top-gripping carrier having a top wall including inner and outer overlapping panels 12, 20, wherein a retaining structure 30 depends from the inner top panel 12 to engage the underside of a radially protruding part of a necked article A, the retaining structure 30 has an opening 40 for receiving at least a portion of the radially protruding part of the article,

and a lower edge of the opening 40 comprises an engaging edge 42 for the underside of the radially protruding part.

It will be recognised that as used herein, directional references such as "top", "base", "end", "side", "inner" and "outer" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another . Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

It should be recognised that numerous changes may be made within the scope of the invention. In particular, it should be apparent to a person skilled in the art that the retention arrangements described above may be applied to a wide variety of carton types, for example wraparound cartons, top gripping carriers and other such clips, in which it is necessary for articles to be packaged having flange portions to be retained without the use of glue or other known means. The position of the retention structure or clip may be adjusted to accommodate articles having flanges at locations other than at the ends of the carton.

CLAIMS

1. A tubular top-gripping carrier having a top wall including inner and outer overlapping panels, wherein a retaining structure depends from the inner panel to engage the underside of a radially protruding part of a necked article, the retaining structure has an opening for receiving at least a portion of the radially protruding part of the article, and a lower edge of the opening comprises an engaging edge for the underside of the radially protruding part.

2. The carrier as claimed in claim 1 wherein the retaining structure includes a connector panel hingedly connected to and extending downwardly from the free edge of the inner panel portion and an engaging flap hingedly connected to the lower edge of the connector panel, and the opening is formed at least in part in the connector panel.

3. The carrier as claimed in claim 2 wherein the engaging flap has an engaging tab projecting into the opening, and wherein the engaging tab comprises the engaging edge.

4. The tubular top-gripping carrier for a plurality of articles, for example bottles, the carrier having a top wall including a pair of inner and outer lap panels, wherein a retaining structure depends from the inner panel, and wherein the retaining structure comprises a spacer strip disposed between adjacent rows of articles, the strip having one side edge for engagement with the articles in one row and the other side edge for engagement with the articles in the other row.

5. The carrier as claimed in claim 4 wherein the retaining structure further comprises a connector panel extending downwardly from the free edge of the inner lap panel portion, the connector panel being hingedly connected at its lower edge to a part of the one side edge of the spacer strip.

6. A carton of the top gripping type for accommodating a plurality of containers, which carton is tubular in structure and comprises first and second spaced panels, said first panel having one or more apertures for receiving said containers, at least one foldable retaining tab hingedly connected to said first panel for operatively engaging an underside

of a radially protruding part of a respective one of said containers, there further comprises a retaining structure hinged to said second panel, said retaining structure comprising an engaging flap with an engaging edge to engage said one of said containers and/ or said at least one retaining tab to restrict movement of said second panel relative to said first panel

7. The carton according to claim 6 wherein each said aperture is defined by a pair of said retaining tabs struck from said first panel, said retaining tabs being disposed in substantially opposed positions.

8. The carton according to claim 6 or claim7 wherein at least one of said retaining tabs having a shallow notch for receiving an edge of said shoulder portion to allow said edge to reach said radially protruding part of said one container.

9. The carton according to any of claims 6 to 8 wherein said retaining structure is provided with an aperture for receiving part of the container, said engaging edge is formed from an edge of the aperture.

10. The carton according to any of claims 6 to 9 wherein said engaging edge is spaced from said top panel.

11. The carton according to any of claims 6 to 10 wherein said engaging flap is disposed between said one container and an adjacent container to minimise relative movement between said one and adjacent containers.

12. A unitary blank for forming a carton of a top gripping type comprising a plurality of panels for forming a tubular structure including a first panel having a plurality of apertures each defined in part by at least one foldable retaining tab hingedly connected to said first panel to be folded out of a general plane of said first panel, and a second panel spaced from said first panel by an intermediate panel and a retention structure hinged to the second panel, said retention structure having an opening for receiving at least a portion of the radially protruding part of the article in a set up condition, and a lower edge of the opening comprises an engaging edge for engaging the underside of the radially protruding part.

13. A blank for forming a carton as claimed in any of claims 1 to 5 or claims 6 to 12.

14. A package comprising at least one container each including a substantially cylindrical upper portion and a part radially protruding from said upper portion; and a tubular top-gripping carrier of the top gripping type for accommodating a plurality of containers, which top-gripping carrier having a top wall including inner and outer overlapping panels, wherein a retaining structure depends from the inner panel to engage the underside of a radially protruding part of a necked article, the retaining structure has an opening for receiving at least a portion of the radially protruding part of the article, and a lower edge of the opening comprises an engaging edge for the underside of the radially protruding part

15. The package as claimed in claim 14 wherein the retaining structure includes a connector panel hingedly connected to and extending downwardly from the free edge of the inner panel portion and an engaging flap hingedly connected to the lower edge of the connector panel, and the opening is formed at least in part in the connector panel.

16. The package as claimed in claim 15 wherein the engaging flap has an engaging tab projecting into the opening, and wherein the engaging tab comprises the engaging edge.

17. The package according to claim 16 wherein said engaging flap is disposed between said one container and an adjacent container to minimise relative movement between said one and adjacent containers.

18. A blank for forming a package as claimed in any of claims 14 to 17.

19. A carrier substantially as hereinbefore described.

20. A blank for forming a carrier substantially as hereinbefore described.

21. A carton substantially as hereinbefore described by reference to or as illustrated in Figure 2, 3 or 4.

22. A blank substantially as hereinbefore described by reference to or as illustrated in Figure 1.

ABSTRACT

A tubular top-gripping carrier and a blank for forming a top-gripping carrier, having a top wall including inner and outer overlapping panels, wherein a retaining structure depends from the inner panel to engage the underside of a radially protruding part of a necked article, the retaining structure has an opening for receiving at least a portion of the radially protruding part of the article, and a lower edge of the opening comprises an engaging edge for the underside of the radially protruding part.

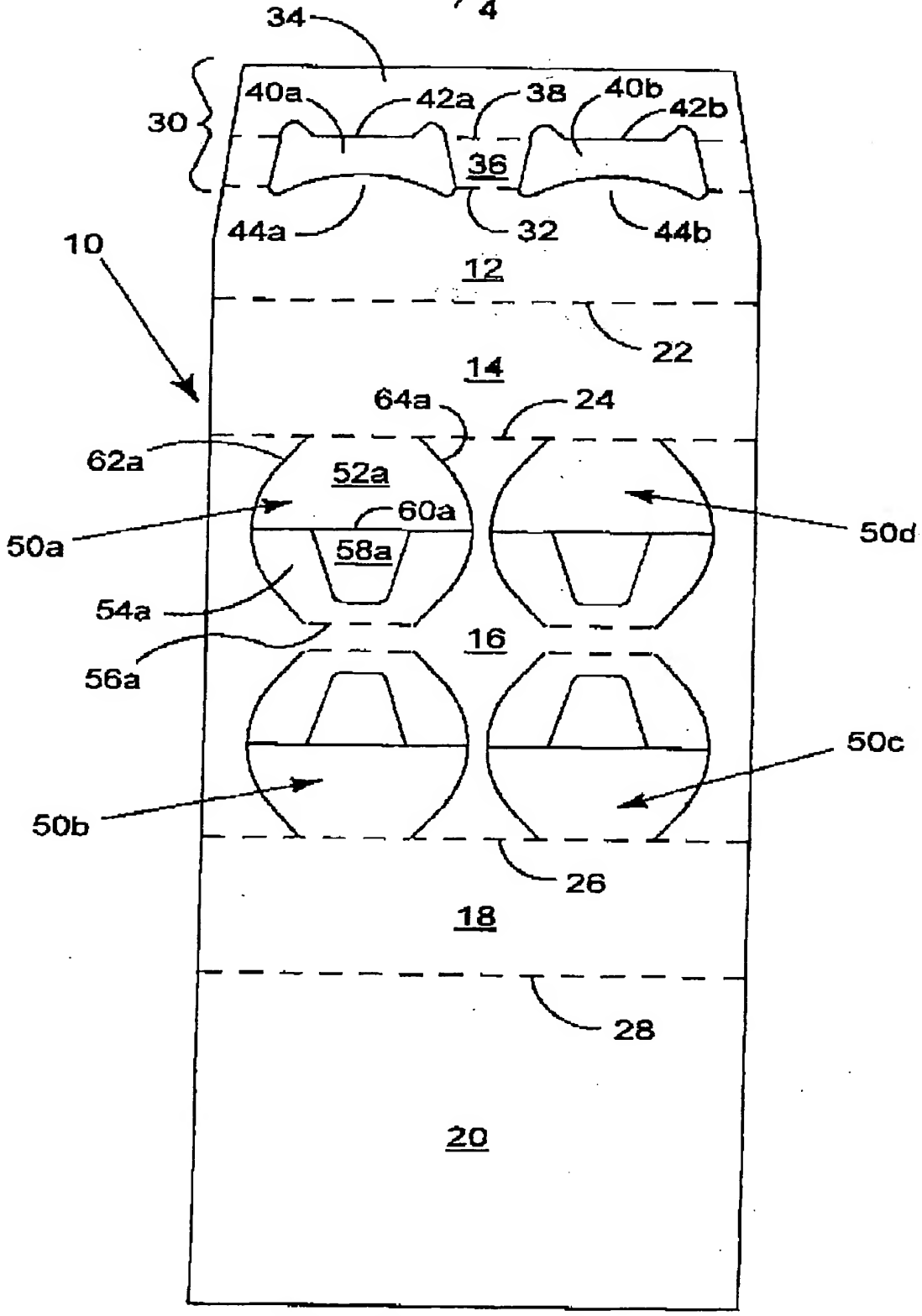

FIGURE 1

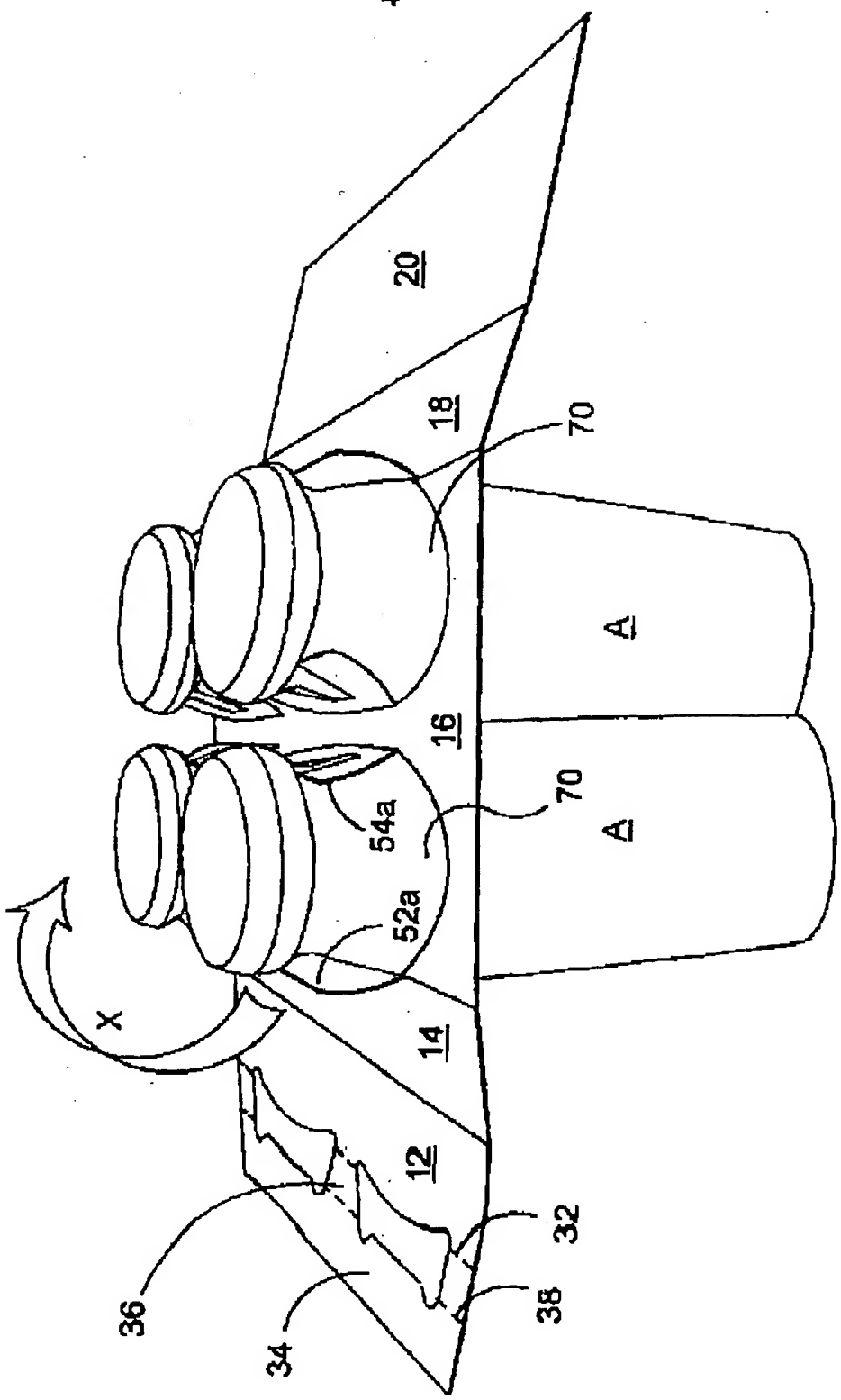

FIGURE 2

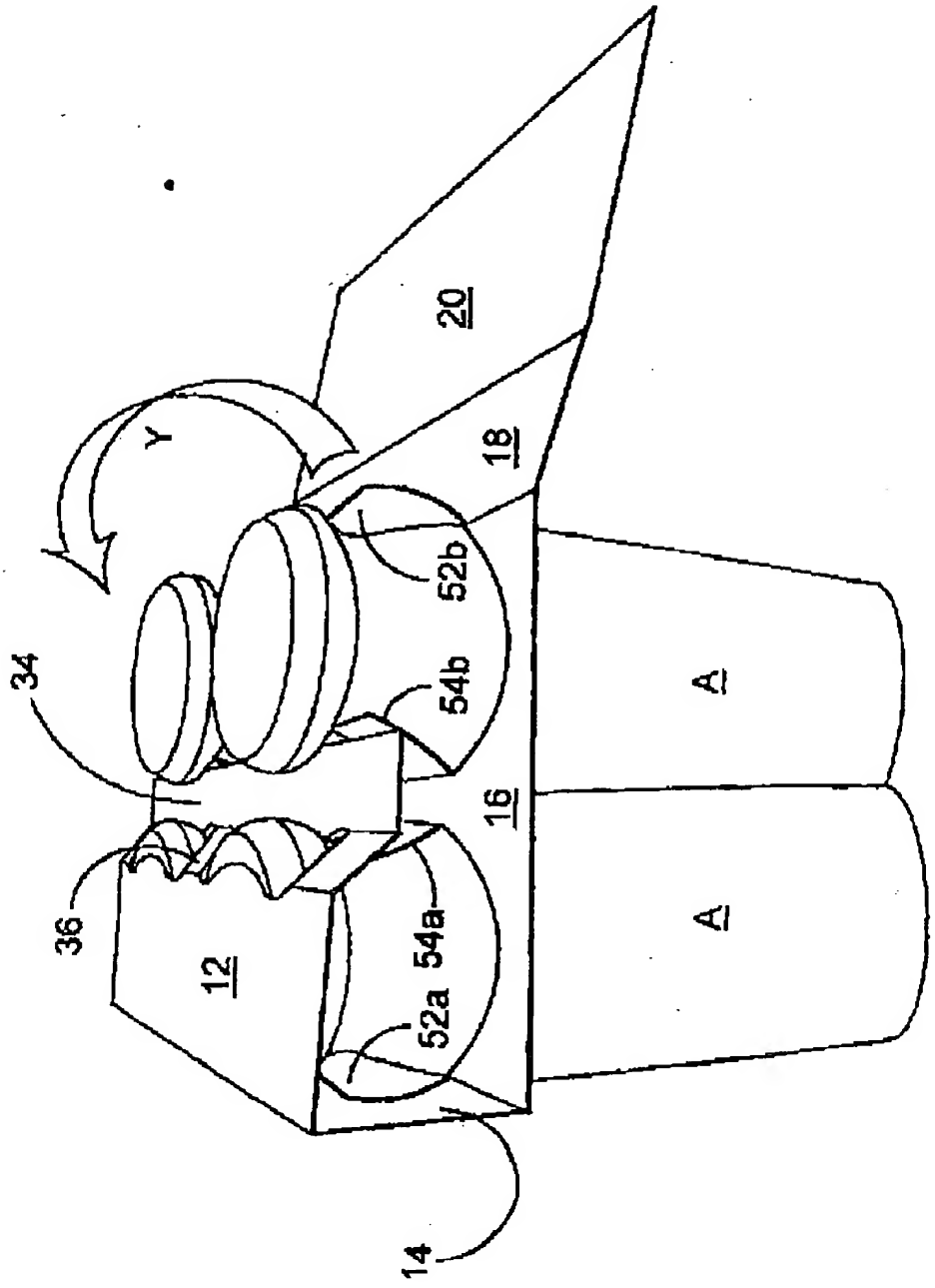

FIGURE 3

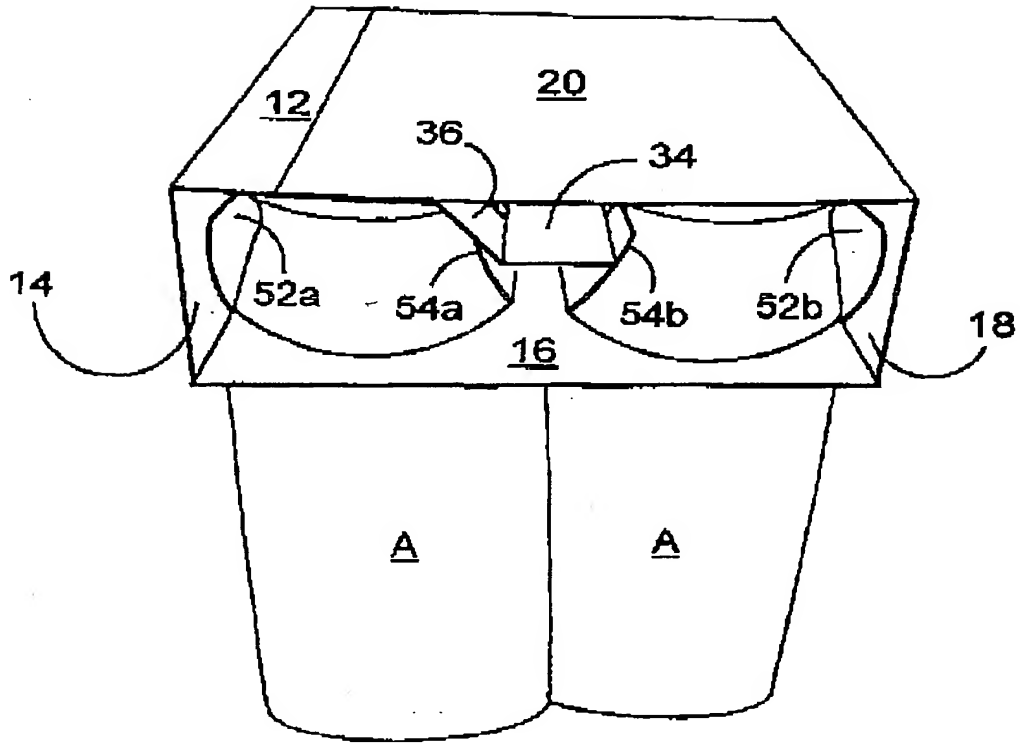

FIGURE 4